



FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS



First Aeronautical Weekly in the World. Founded January, 1909

Founder and Editor : STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM

No. 988. (No. 48. Vol. XIX.)

DECEMBER 1, 1927

Weekly, Price 6d.
Post free, 7d.

Flight

The Aircraft Engineer and Airships

Editorial Offices: 36, GREAT QUEEN STREET, KINGSWAY, W.C.2
Telephone: Gerrard 1828. Telegrams: Truditur, Westcent, London.

Annual Subscription Rates, Post Free.

United Kingdom .. 30s. 4d. Abroad .. 33s. 0d.*

* Foreign subscriptions must be remitted in British currency.

CONTENTS

	PAGE
Editorial Comment:	
That Speed Record	817
Britain at I.L.A.?	818
Long-Range Flying-Boats	818
Curtiss "Condor"	819
Fairchild-Camenez Engine	821
In Parliament	822
Private Flying: Australian Aero Club	823
Light 'Plane Clubs	824
Royal Aero. Club Official Notices	825
Model Airships	826
Airisms From the Four Winds	827
"The Old Flying Days"	828
On "Copying"	829
Royal Air Force	830
R.Ae.S. and Inst.Ae.E. Official Notices	830

"FLIGHT" PHOTOGRAPHS.

To those desirous of obtaining copies of "Flight" Photographs, these can be supplied, enlarged or otherwise, upon application to Photo. Department, 36, Great Queen Street, W.C.2

For Sizes and Prices, see Advert. on page iii.

DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in this list:—

1927

- Dec. 1 "The Problem of the Long Range Flying Boat." Maj. J. D. Rennie, before R.Ae.S. and I.Ae.E.
- Dec. 2 No. 3 Sqdn. R.F.C. and No. 3 (Fighter) Sqdn., R.A.F. 4th Reunion Dinner, at Trocadero.
- Dec. 7 "Air Power and its Application." Group-Capt. W. F. MacNeece Foster, Royal United Service Inst.
- Dec. 8 "Fog." Capt. F. Entwistle, before R.Ae.S. and I.Ae.E.
- Dec. 15 "The Development of Torpedo-Carrying Aircraft." Maj. A. F. Bumpus, before R.Ae.S. and I.Ae.E.
- Dec. 31 Entries Close for R. 38 Memorial Prize (R.Ae.S.).

EDITORIAL COMMENT



assumed that the machine would be put up for the straight-line speed record, if not before leaving Venice then at least as soon as possible after its return to England. During the past week or so the daily newspapers have given short paragraphs stating that no attempt is to be made on the record. Enquiries made at the Air Ministry elicit but little information, but it appears that so far definite decision has not been made in the matter. It is, however, pointed out that in any case it would be impossible to get the machine ready for the attempt to be made this year. Under the present conditions this is probably true. By the time the S.5 has finished making an exhibition of itself on the Horse Guards Parade, is once more packed for transport to Southampton, is unpacked, touched up and re-erected, we might easily be approaching the New Year and the Christmas holidays, with scant opportunity for work on machine and engine, let alone test flights. But the question will not unnaturally be asked why it should be necessary to waste eight weeks in getting the machine from Venice to London. If it was known after the race that the transport to England would take so long, it would seem to have been the obvious thing to put the machine through the speed test at Venice. The Italians set us a splendid example by accomplishing the unprecedented feat of getting to work instantly after the race, and for the first time in the history of the Schneider Trophy Race we had the extraordinary experience of seeing the losers of the race put up, within a few weeks, a new world's speed record.

That
Speed
Record

On the other hand, if it was known at the time that transport to England was going to occupy some eight weeks, surely some better form could have been found. It is always dangerous to rest on one's laurels and to sit down with a satisfied "There, That's that."

Having won the Schneider race in such magnificent style, apparently that is exactly what was done. And the pity is that, unless a general outcry is made, there is every possibility that this frame of mind may persist until a challenge for next year's race is received. Then there will be a frantic scurrying and feverish activity for another few months. If this year's effort is to prove but a flash in the pan, then the whole value of the Schneider Trophy win will be largely wasted. Sustained effort is what is required, and a spasmodic awakening to life is of little use.

It will doubtless be argued that the superiority shown by the British machines in the actual Schneider race was such that no one will doubt that if we were so minded we could easily beat de Bernardi's splendid new record. We ourselves may honestly believe that. But it is very dangerous to assume that all other nations do so. And in the meantime Italy is reaping a well-deserved reward for her enterprise, and is doubtless drawing full benefit from the prestige attending the holding of such an important record. Major G. C. Turner, in *The Daily Telegraph*, brings his usual excellent commonsense to bear on this subject, and points out that if the reason for not attempting to beat the Italian record is that it is not desired to disclose the actual top speed of the British machines, then the excuse is a feeble one, since all that is necessary is to beat de Bernardi's speed by five miles per hour.

To us it seems that the position is approximately as follows: Either our machines are so superior to the Italian monoplanes that we can afford to use them, with minor modifications perhaps, for next year's race, in which case Major Turner's argument as to just beating the record holds good; or else they are only just able to beat the record, in which case they will not be good enough to act as defenders next year, and there is no point in keeping "dark" their actual speed. Whichever way one looks at it, there does not appear to be any advantage at all in waiting, although as things have turned out, it is probably hopeless to expect an attempt to be made this year.

❖ ❖ ❖

Britain
at
I.L.A.?

The International Aero Show which, as announced in *FLIGHT* last week, is to be held at Berlin from October 7 to 28 next year, is almost certain to be a very important affair. Germany has made such amazing strides in aviation during the last few years that it is to be expected that her first International Aero Show since the war will be treated as an event of some consequence. That being so, it becomes a

matter of very considerable importance to the British Aircraft industry to be adequately represented at the exhibition.

It is true that there are a good many months yet in which to think the matter over, but these things have a habit of drifting along, being postponed over and over again. That, we submit, would be a dangerous policy and steps should be taken at once to ascertain whether or not any form of assistance can be expected from the Air Ministry (or perhaps one should rather say, from the Treasury) so that joint action may be taken by the S.B.A.C.

❖ ❖ ❖

Long-Range Flying- Boats

In the paper which he is reading to-night before The R.Ae.S. & I.Ae.E., Major Rennie calls attention to the fantastic claims which well-meaning but ignorant people have put forward for the flying-boat as a suitable craft for long overseas flights. These claims, Major Rennie points out, usually incorporate multi-engined power plants, passengers in the wing, smoking saloons, etc. He then devotes his paper to facing facts as they are, and examines the problems connected with the long-range flying-boat in a clear and illuminating manner.

The paper contains the somewhat surprising statement, in connection with seaworthiness, that: "In this respect, so far as hull form affects seaworthiness, the great majority of modern flying-boats are inferior to the 'F' boats developed by the late Commander J. C. Porte, R.N., during the late war." It seems likely that the author of the paper may be called upon, during the discussion, to amplify that statement somewhat, although he does hint at what is behind it by saying that "This defect is probably the result of lack of knowledge of the experience gained in the development of these and other boats during this period, and to the acceptance of tank test results, as providing sufficient data on which to base the design, without regard to the full-scale requirements."

The results of calculations dealing with the effect of take-off speed on time and run to take off are interesting, as are also those of wind and power loading. Under "Air Performance," Major Rennie discusses the effects on range and cruising speed of aspect ratio, take-off speed, fineness, and effect on range of improved throttled engine consumption. Altogether the paper is one of the most valuable statements of the capabilities and limitations of the flying-boat that have yet appeared.

COLOURED SUPPLEMENT TO "FLIGHT," DECEMBER 8.

With every copy of next week's issue of "FLIGHT"—December 8—will be presented a special supplement in five colours, on plate paper, suitable for framing, depicting the Short "Singapore" all-metal flying-boat with two Rolls-Royce "Condor" engines now being flown by Sir Alan Cobham on the Wakefield Survey Flight around Africa.

The supplement is a reproduction of an original painting by Mr. Donald Maxwell, and measures 19 by 14 inches.

Our readers will be well advised to order their copies in advance, and to see that they receive the plate. Subscribers' copies will be sent in postal cylinders under separate cover.

THE CURTISS "CONDOR"

A Recent American Night Bomber

IN a recent issue of *FLIGHT*, reference was made to the tests that had been carried out with a new bombing machine, known as the "Condor," constructed by the Curtiss Company. We are now able to give some illustrations and brief particulars of this machine.

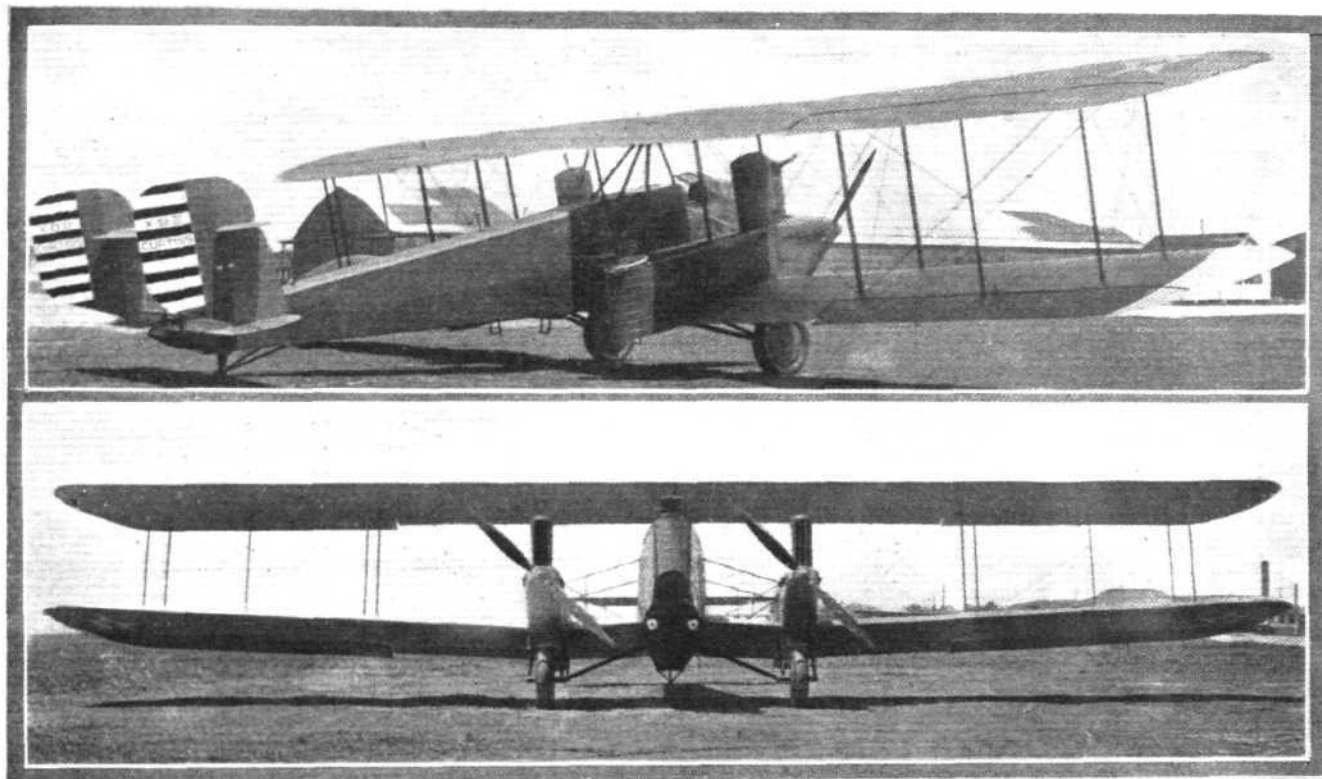
The "Condor," which is claimed to be the largest all-metal bomber in the world, is a twin-engined fuselage biplane, being a development of the Curtiss NBS-4 bomber built by the Curtiss company in 1924 which proved to be a very successful machine in service. Several of the NBS-4 features have been retained in the "Condor," which together with various improvements and increased power should go to make the new bomber one of the best of its class.

In spite of its size—it has a span of 90 ft. and weighs, empty, 9,020 lbs.—it has an excellent performance, accomplishing in its preliminary tests a speed of 128 m.p.h. and attaining a service ceiling of 15,000 ft. Fully loaded it took off in 18 seconds, climbed well, was easy and sensitive on the

Auxiliary pedals are provided for operating hydraulic brakes fitted on the landing wheels, which can be applied either in unison or independently. The bomber's compartment is located forward below the pilot, and sliding metal floors provide communication between the bomber's compartment and the pilot's cockpit; the forward gunner can also obtain access to the bomber's compartment. The starboard gun station, it may be added, is provided with wireless apparatus while the port gun station is equipped with photographic gear, so that the two rear gunners also act as wireless operator and photographer.

As regards the construction of the "Condor," several interesting features are to be found. The structure is entirely of metal, in which duralumin plays a greater part, this material being employed for the fuselage, tail and wing ribs, while alloy steel is used for the wing spars, engine mounting, bomb-bay and other highly-stressed parts.

The high-aspect wings, which are of equal span and chord



THE CURTISS "CONDOR": Two views of a recent American all-metal bomber, fitted with two 600 h.p. Curtiss GV 1550 engines.

controls, and flew well on one engine. It carries a useful load of about 7,300 lbs., or 45 per cent. of its gross weight.

Perhaps the most interesting feature of the "Condor" is the location of its crew of five, comprising pilot, bomber and three gunners. One of the latter is stationed in the nose of the fuselage when with his double Lewis gun he commands an uninterrupted range of fire forward, above and below. The second and third gunners are located in cockpits at the rear of each of the engine nacelles, which project beyond the trailing edges of the lower planes, from which position an unrestricted range of fire to the rear is obtained.

This placing of the gunners, therefore, is such that it permits intersection of fire at any given point by at least two of the three gunners. The "Condor" should thus prove to be a formidable customer for any attacking aircraft.

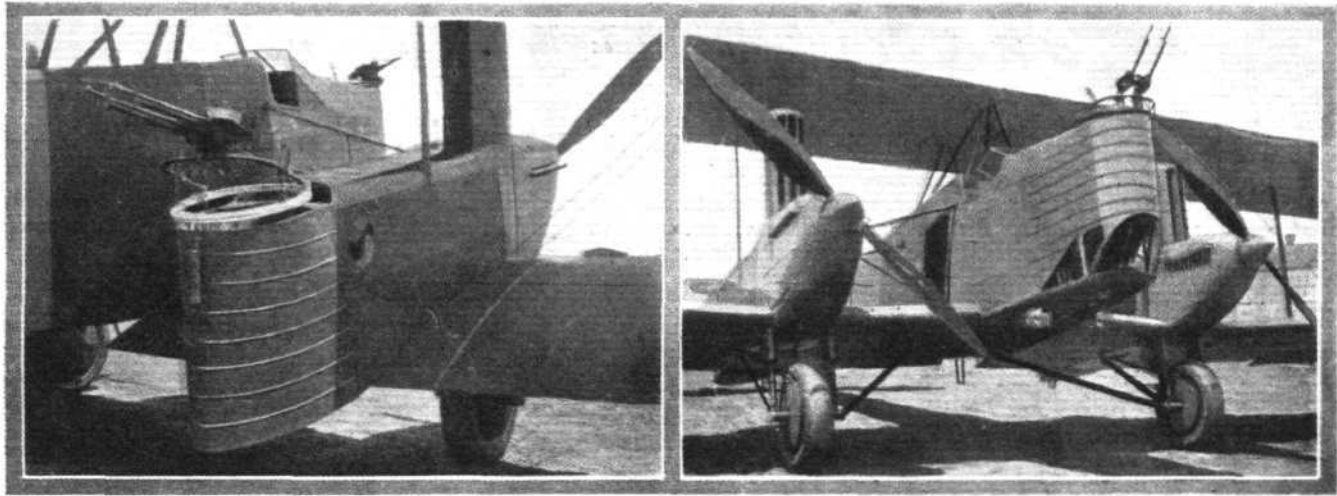
The pilot's cockpit is located, as usual, in the forward part of the fuselage, in line with the leading edge of the main planes; it is provided with two seats side by side, and a "single-dual" control. That is, it is a conventional wheel-type control column which is, however, pivoted so as to swing from side to side and thus be operated from either seat. The rudder pedals and seats are adjustable to suit the pilot.

without sweep back but with a dihedral angle of 3 degs. for the lower plane, are of conventional design, having the C-72 wing section developed in the Curtiss wind tunnel. The upper wings comprise a centre section and two outer panels (each two-bay), and the lower wings have two "sidewalk" panels between engine nacelles and fuselage and two outer panels corresponding to the upper ones.

Balanced ailerons of the Frieze type are fitted to both top and bottom planes, providing exceptionally easy and effective lateral control. The operating cables are in the lower wings, a strut connecting upper and lower ailerons.

The main wing spars—of welded heat-treated chrome-molybdenum steel—are built up of two elliptical tubes with welded interbracing forming a Warren truss; the ribs are built up of riveted Duralumin. The only non-metal material of the wings is the fabric covering. Numerous inspection windows (celluloid) are provided at various points. Inter-plane bracing is of the usual streamlined wires and steel-tube struts, with all attaching fittings concealed.

It is stated that the entire wing structure comes out lighter than one of wood construction—the average weight of the wing panels of the "Condor" being 1.30 lbs. per square foot as compared with 1.34 lbs. per square foot for the wood and



THE CURTISS "CONDOR": Two views showing the somewhat unusual arrangement of the gun stations. One is located in the nose of the fuselage, whilst two others are situated one at each rear end of the engine nacelles.

fabric wings of the NBS-4—in spite of the fact that the "Condor" has a greater wing loading.

The tail is of the biplane type—similar to that used on the NBS-4—of Duralumin construction, fabric covered. The stabilisers are adjustable in flight, and the twin rudders are provided with an automatic compensating device which can be set by the pilot to hold the rudders in an offset position when flying on one engine.

The fuselage is a Warren truss structure of Duralumin tubing, except in the highly-stressed parts, where steel is employed. Fittings are of steel tubing or sheet steel fastened into the tubing with hollow steel tubular rivets.

A standard Army G-5 bomb rack is fitted in the fuselage, just aft of the pilot's cockpit, and non-shatterable glass windows are provided in the nose and floor for bomb sighting.

The two Curtiss V-1500 engines are carried in outboard nacelles on the lower plane, each engine being located at the forward end and driving a tractor airscrew. The nacelles are of steel tubing and the engine mounting is detachable. In each nacelle, just aft of the engine, is a 192-gal. petrol tank, while a third, 60-gal., tank is carried in the upper wing. Either engine can draw fuel from any one of these three tanks, while in the event of failure of the fuel pump on either engine, the other pump will supply fuel to both engines.

Cartridge core type radiators, of fan streamline section, are employed for cooling, one radiator, with vane shutters, being mounted above the nacelle behind the engine.

The engines are neatly cowled, new flush type fasteners being used, which facilitate quick removal and replacement. Each engine drives a 14-ft. Curtiss-Reed airscrew at 1,200 r.p.m. (engine speed—2,400 r.p.m.). The pitch of the blades can be adjusted on the ground.

The landing gear is of the non-axle type, and the shock-absorbing unit is a combination of oleo and the compression rubber disc unit employed successfully on other Curtiss machines.

It may be of interest to note, in conclusion, that the "Condor" when completed weighed within 10 lbs. of the original calculated weight!

The principal characteristics of the "Condor" are:—

Span	90 ft. 0 in.
O.A. length	47 ft. 5½ in.
Height	16 ft. 6 in.
Chord	9 ft. 0 in.
Gap (max.)	13 ft. 6 in.
Wing area	1,498 sq. ft.
Weight, empty	9,020 lbs.
Weight, laden	16,300 lbs.
Wing loading	10.9 lbs./sq. ft.
Power loading	13.6 lbs./h.p.
Speed range	56—116 m.p.h.
Climb (ground level)	860 ft./min.
Ceiling	14,000 ft.
Range (cruising)	800 miles.



○ ○ ○ ○ ○ ○ ○ ○
 ○
 ○ The Great Flying-
 ○ Boat Cruise: Our
 ○ picture shows one
 ○ of two all-metal
 ○ Supermarine
 ○ "Southampton"
 ○ flying boats that
 ○ are being shipped
 ○ to the East in
 ○ connection with
 ○ the R.A.F. Far
 ○ East flight. It
 ○ —that is, the hull
 ○ —is being trans-
 ○ ported by road,
 ○ in a neat little
 ○ packing-case, from
 ○ Southampton to
 ○ the London Docks.
 ○ The wings and
 ○ other fittings are
 ○ disposed of separ-
 ○ ately, in extra suit
 ○ cases!
 ○
 ○ ○ ○ ○ ○ ○ ○ ○



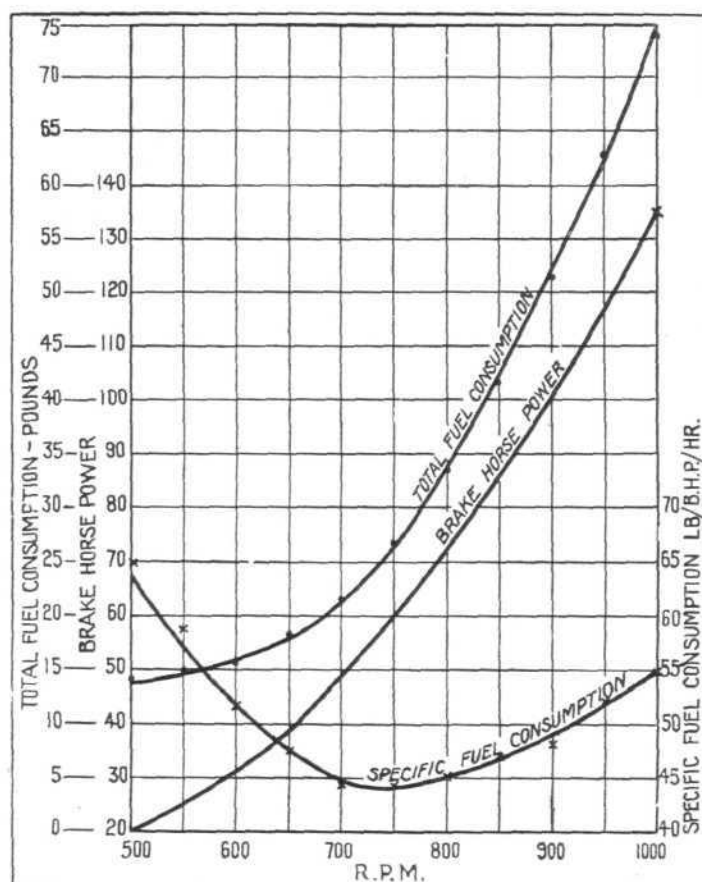
UNORTHODOX AMERICAN ENGINE SHOWS REMARKABLE FUEL ECONOMY

The Fairchild-Caminez Flight-Tested for Over 17 Hours

It is now some years ago that the "Caminez" engine was first produced, and a year or so ago the Fairchild Aviation Corporation of New York took over the engine for further development, the engine henceforth becoming known as the Fairchild-Caminez. Of very unorthodox design, this engine is a four-cylindrical radial air cooled, in which, instead of the usual crankshaft and connecting rods, the pistons operate, *via* rollers in the piston skirt, on a double-lobed cam on the main shaft. The engine is a normal four-stroke, but owing to the peculiar cam drive each piston completes one power stroke in each revolution of the main shaft. One important feature of the special system of operation is that the main shaft rotates at a very low speed. Obviously one cannot say that the main shaft rotates at "one-half engine speed," but that in effect is the result of the cam drive. Put in another way, the main shaft rotates at a speed one-half of that of a normal engine of the same capacity and with the same piston speed. Consequently, the thrust horse-power of the Fairchild-Caminez engine is high, and by fitting a large-diameter propeller excellent get-off and climb are obtained. The particular type of engine in question develops 135 b.h.p. at a main shaft speed of only 1,000 r.p.m., and for a weight of 340 lb., or 2.52 lb./h.p. This is rather too much for a modern light 'plane, but presumably there would be no difficulty in producing a slightly smaller version giving some 80 h.p. or so, when the small size of engine and low propeller speed should be particularly efficient in the types of light 'plane now becoming so popular in this country.

In the American tests of fuel consumption a Fairchild-Caminez 447 B cam engine was used, fitted in a Waco 10 biplane. This particular engine was an old experimental one which had been flown a total of more than 100 hours without being overhauled previously to the consumption test. The Waco 10 carried pilot and observer, and in the test made on October 1, 1927, an average cruising speed of 80 m.p.h. was maintained, the average propeller speed being 725 r.p.m. At the end of the seven hours' flight the quantity of petrol consumed was found to be 34 gallons, corresponding to an average consumption of 4.8 gallons per hour. This figure indicates American gallons, of course, and represents an hourly consumption of 4 imperial gallons. The average oil consumption was 0.18 U.S.A. gallon per hour.

For the second test the petrol capacity was increased to



FAIRCHILD-CAMINEZ ENGINE: Propeller load curves of brake horse-power, total fuel consumption, and specific fuel consumption, against revolutions per minute. The engine has a capacity of 447 cub. in., and weighs 340 lb.



The Waco 10, fitted with Fairchild-Caminez engine, used in the fuel consumption tests. Note the large-diameter propeller and the small size of the engine (135 b.h.p.).

110 U.S.A. gallons. The machine took off at 5.31 p.m. on October 16, with 107 gallons of petrol and 7 gallons of oil on board, which, with equipment and instruments, made a total useful load of 1,000 lb. In this connection it is of interest to record that the Waco 10 had no difficulty in getting off, owing to the good propeller efficiency. On a previous occasion the machine had reached a height of 15,000 ft., carrying a useful load of 750 lb.

During the consumption test flight the pilot's records show that after gaining height the engine was throttled to 800 r.p.m., this speed being maintained for about two hours, after which the propeller speed was reduced gradually as the petrol load was consumed. At 6 a.m. the following morning, after 12.5 hours' flying, the engine was turning at 690 r.p.m. Shortly after this, bad weather and rain set in, and for two hours the pilot found it necessary to run the engine at nearly full throttle in order to avoid the rain as much as possible. At 10.51 a.m. the pilot landed, finding the visibility too poor and conditions unsuitable for obtaining fair data on petrol consumption. The machine had been in the air for 17 hours 20 mins., and in that time the engine had consumed 85.44 U.S.A. gallons (71.2 imperial),

the average hourly consumption being 4.9 gallons (4.08 imperial). The oil consumption was 5.5 gallons (4.578 imperial) or 0.33 gallon (0.274 imperial) per hour. The figures of consumption were officially observed by Capt. W. P. Hayes and Lieut. J. Beveridge, of the U.S. Army Air Corps and Prof. O. H. Lunde, of N.Y. University.

The engineers of the Fairchild-Camenez Corporation claim that this engine has a high thermal efficiency due to efficient cylinder design, and to a very effective manifold and carburation. It is also held that the piston motion obtained by the cam mechanism produces a more efficient cycle than is obtained with the conventional crank mechanism.

The high mechanical efficiency of the engine is ascribed to the use of anti-friction bearings of the ball and roller type throughout, coupled with a total absence of gearing for the valve-actuating mechanism. In this engine the push rods are driven direct from the main shaft.

We understand that a Fairchild-Camenez engine is to be mounted in a machine intended for an attempt to beat the existing world's duration record, it being considered that the low fuel consumption at throttled condition makes the engine particularly suitable for such an attempt.

IN PARLIAMENT

Imperial Airways, Ltd., Subsidy

COMMANDER BELLAIRS, on November 21, asked the Secretary of State for Air what is the approximate cost to the State by reason of the subsidy for every mile flown by a civil aviation machine in the subsidised Imperial Airways Service?

Sir P. Sassoon: In 1926 the aircraft operated by Imperial Airways, Ltd., flew 732,980 miles on the European subsidised services. During that year the subsidy was at the rate of £137,000 per annum, and therefore the cost to the State per mile was, approximately, 3s. 9d.

Schneider Cup Race

REAR-ADMIRAL SUETER, on November 22, asked the Secretary of State for Air whether, in view of the great international interest taken in the Schneider Cup race, he can say that the race will receive similar Government support next year?

Sir S. Hoare: The whole question is now under consideration.

Comparative Statistics

MR. RENNIE SMITH, on November 23, asked the Secretary of State for Air what are the comparative figures for the British Air Force and the largest air force possessed by any Power on the Continent of Europe in regard to the number of machines, number of men, and total horse-power of engines?

Sir P. Sassoon: The present approximate first line strength of the Royal Air Force is 750 aircraft, of which 270 are in squadrons stationed abroad. The total personnel of the force is 29,985. The present strength of the French Air Services, according to my latest information, is about 1,350 first-line aircraft, of which some 280 are in units abroad. It is not practicable to give the number of personnel engaged in air duties in France, since large numbers of those so employed belong to the Army and Navy; nor can any useful comparative figures be given for horse-power of the engines.

North-West India (Air Establishments)

MR. WELLOCK asked the Secretary of State for Air whether there has been any increase in the air establishments in North-West India during the present year; and whether it is proposed to increase such establishments in North-West India?

The Under-Secretary of State for India (Earl Winterton): I have been asked to reply. The answer to the first part is in the negative. As regards future policy I am not prepared to make any statement at present.

Cardington Airship Shed

COLONEL DAY asked whether the tenders invited for the new air shed at Cardington were advertised for in the public Press; if so, in how many, and in what papers did this advertisement appear?

Sir S. Hoare: The answer to the first part of the question is in the negative, and the remaining parts, therefore, do not arise. The usual practice was followed of inviting tenders from firms on an approved list of contractors in each branch of the engineering and building trade.

Air Gunnery and Bombing Range at Skipsea

MAJOR BRAITHWAITE, on November 24, asked the Secretary of State for Air if he is in a position to give any information on the proposed air station at Skipsea, East Yorks?

Sir P. Sassoon: Proposals for the establishment of an air gunnery and bombing range on the coast near Skipsea are under consideration and have been the subject of correspondence with the shipping and other interests which may be affected, and it would be too early as yet to make any definite statement in regard to the result of the negotiations which are in progress. I may add that there is no question of establishing a large permanent station in this vicinity.

Anglo-German Air Traffic Agreement

LIEUT.-COMMANDER KENWORTHY asked whether the German Government

has withdrawn all restrictions on British civil aeroplanes flying over German territory; and when it is intended to establish the civil air line between London and Prague, as desired by both His Majesty's Government and the Czechoslovakian Government?

Sir P. Sassoon: As regards the first part of the question, the Anglo-German Air Traffic Agreement was signed at Berlin on June 29 last, and will come into force as soon as it has been ratified. Ratification by Germany involves certain legislative measures which have not yet been completed, but in the meantime it has been arranged that occasional flights may be made without special permission between the two countries in accordance with the stipulations of the Agreement. Under the Agreement the establishment of regular air services by nationals of the one State over the territory of the other will require the formal permission of the competent aviation authorities of the latter country in each case. As regards the second part of the question, the negotiations between the Czechoslovak Government and Imperial Airways, Ltd., for the extension of the London-Cologne air service to Prague have so far proved abortive, and pending a settlement it would be premature for His Majesty's Government to re-open with the German Government the question of permission for this service.

Light Aeroplane Clubs (Assistance)

MAJOR BRAITHWAITE asked the Secretary of State for Air if his attention has been called to the financial condition of the light aeroplane clubs; if he is aware that under the old scheme of subsidy most of the clubs are left with a legacy of debt; and will he take some steps to clear these old liabilities to leave the clubs an opportunity of operating, as they can do under the new scheme, with a measure of financial security?

Sir P. Sassoon: Yes, I am aware that some of the light aeroplane clubs are in financial difficulties, but the subsidies and other assistance which the Air Ministry can grant are definitely limited by the terms of the agreements with them, and I am afraid that, in view of the urgent need for economy, there is no possibility of their being relieved of their existing liabilities by means of further grants from public funds.

Civil Aviation in India

MR. SPOOR asked the Under-Secretary of State for India whether he can state the policy of the Government of India with regard to the development of civil aviation in India; whether steps are being taken to ensure that aerial transport does not fall into the hands of foreign interests; and whether facilities are being afforded to Indians for training as pilots, mechanics, etc.?

Earl Winterton: The policy of the Government of India, with regard to the development of civil aviation, is described in a memorandum published last year, of which I am having a copy sent to the hon. Member. Since then a Director of Civil Aviation in India has been appointed, and this officer is actively engaged in preliminary work with a view to the formulation of definite schemes. This policy aims essentially at the objects stated by the hon. Member.

Automatic Slot Control

VISCOUNT SANDON asked the Secretary of State for Air whether the new anti-stalling device will be fitted immediately on civil and Imperial Airways aeroplanes as well as on Service machines?

Sir S. Hoare: The automatic slot control is now being fitted experimentally to an Imperial Airways air liner, in order that the details of its application to the special characteristics of that type of aircraft may be determined, since each type of aircraft has to be dealt with in turn for this purpose. I am confident that manufacturers of civil aircraft will not be slow to incorporate the device in their machines once it has been proved successful on the various types.

MODEL AIRSHIP RESEARCH

A SCHEME is now in the course of being formulated for a competition to be held with the view to encourage what might be termed "airship air-mindedness" among model aircraft builders in this country. The suggestion tentatively is that the competition should take the form of an essay on model airships, possibly on what model airship research could do for aviation. The Society of Model Aeronautical Engineers has expressed willingness to give a prize towards

such a competition, and the Editor of FLIGHT has added to this a prize of equal amount. The details of the competition have not yet been definitely settled, but a more detailed announcement will be made shortly. In the meantime, readers of FLIGHT interested in the subject are asked to send suggestions either to the Editor, or to the Secretary of the Society of Model Aeronautical Engineers, Mr. S. H. F. Crouch, 23, Mayfair Avenue, Ilford.

PRIVATE FLYING



A Section of **FLIGHT** in the Interests of the Private Owner, Owner-Pilot, and Club Member

AUSTRALIAN AERO CLUB

Report for 1927

A REPORT for the year ending August 31, 1927, has been issued by the Australian Aero Club, and it reveals the progress of the Mascot Club at Sydney, whose activities this year we have closely followed in these columns. Adequate provision has been made for depreciation and replacement of plant, and during the financial year which ended June 30, 1927, the Club's assets have increased from £310 15s. 8d. to £3,521 7s. 9d. After providing for replacement of machines in accordance with the original estimates, the flying section shows an excess of income over expenditure amounting to £37 18s. 9d.

The membership is now 47 Pilot Members; 307 Ordinary Members, and 33 Pupil Members, making a total of 387. The period which the report covers constitutes the first year of operation and the results obtained are claimed by the Club as a probable record. A total of 1,331 hours have been flown for 5,435 flights. Fifty-four pupil members enrolled for elementary instruction, of whom 28 obtained their "A" Licences, whilst two others were practically ready for the tests when they had to leave for England. Elementary pupils to the number of 36 have flown solo; many pilot members are taking the advanced course, seven of whom have already passed for the certificate. Over 2,500 passengers have flown in the Club's machines, and the cheap propaganda flights, which were inaugurated for the benefit of the public, have incidentally paved the way for several commercial developments on similar lines.

In addition to the three de Havilland "Moths" on loan from the Commonwealth Government, delivery has been taken of a fourth "Moth," purchased from Club funds, whilst an order was placed for yet another "Moth," of the X type, which, by now, will have been received. Such progress has essentially meant considerable increases in the staff, and this now consists of two pilot instructors, three engineers, and an assistant. This able body has the unique distinction of involving no pilot, pupil or passenger in any mishap or causing them the slightest injury. A permanent secretary is employed, another large hangar for the housing of private aircraft is to be erected, a new roadway has been constructed to the Club House, whilst other proposals include a refreshment kiosk, a compass-swinging base and a drinking fountain. We give below a summarised version of their balance-sheet for its interesting insight into the expense of running an

important club and its possible guidance to those interested in such organising.

Expenditure

	£	s.	d.
Petrol, <i>less</i> sales and stock on hand..	594	13	9
Oil, <i>less</i> stock on hand	96	5	6
Salaries and wages	1,740	4	11
Repairs and Materials	400	5	4
Commission on Passenger Flights ..	44	19	0
Log Books, <i>less</i> Sales and stock on hand		1	0
Training Manuals, <i>less</i> Sales, etc ..	1	12	0
Earphones, <i>less</i> Sales		9	0
Freight and cartage	12	18	2
Advertising	54	16	0
Insurance	33	12	3
Ford Car Registration Fee	4	12	0
Pupil's Course at A.E. Institute..	26	5	0
Tools	44	7	8
Provision for Depreciation	1,154	0	0
Plant Depreciation	123	18	3
Excess of Income over Expenditure for the Year transferred to General Income and Expenditure Account		37	18 9
	£4,370	18	7

Income

	£	s.	d.
Entrance Fees from Flying Members, <i>less</i> Refunds	355	19	3
Subscriptions from Flying Members ..	250	18	0
Bonuses from Commonwealth Govern- ment	420	0	0
Dual Instruction Fees	1,739	11	0
Solo	735	5	0
Passenger Flights	604	0	0
Propaganda	230	5	0
Locker Rents	10	12	6
Service Fees	21	18	0
Sale of Goggles	2	9	10
	£4,370	18	7

BLACKBURN "BLUEBIRD" Mk. II

New Model

THIS two-seater light aeroplane has been modified and is now produced as an improved model. The position of the engine has been lowered, and this has given the top and bottom curves of the nose a more symmetrical shape. There is now an increased gap between the wings, and part of the top centre 'plane has been cut away at the trailing edge, which greatly improves the view. The chassis track is wider and it gives the machine a better ground stability when taxiing.

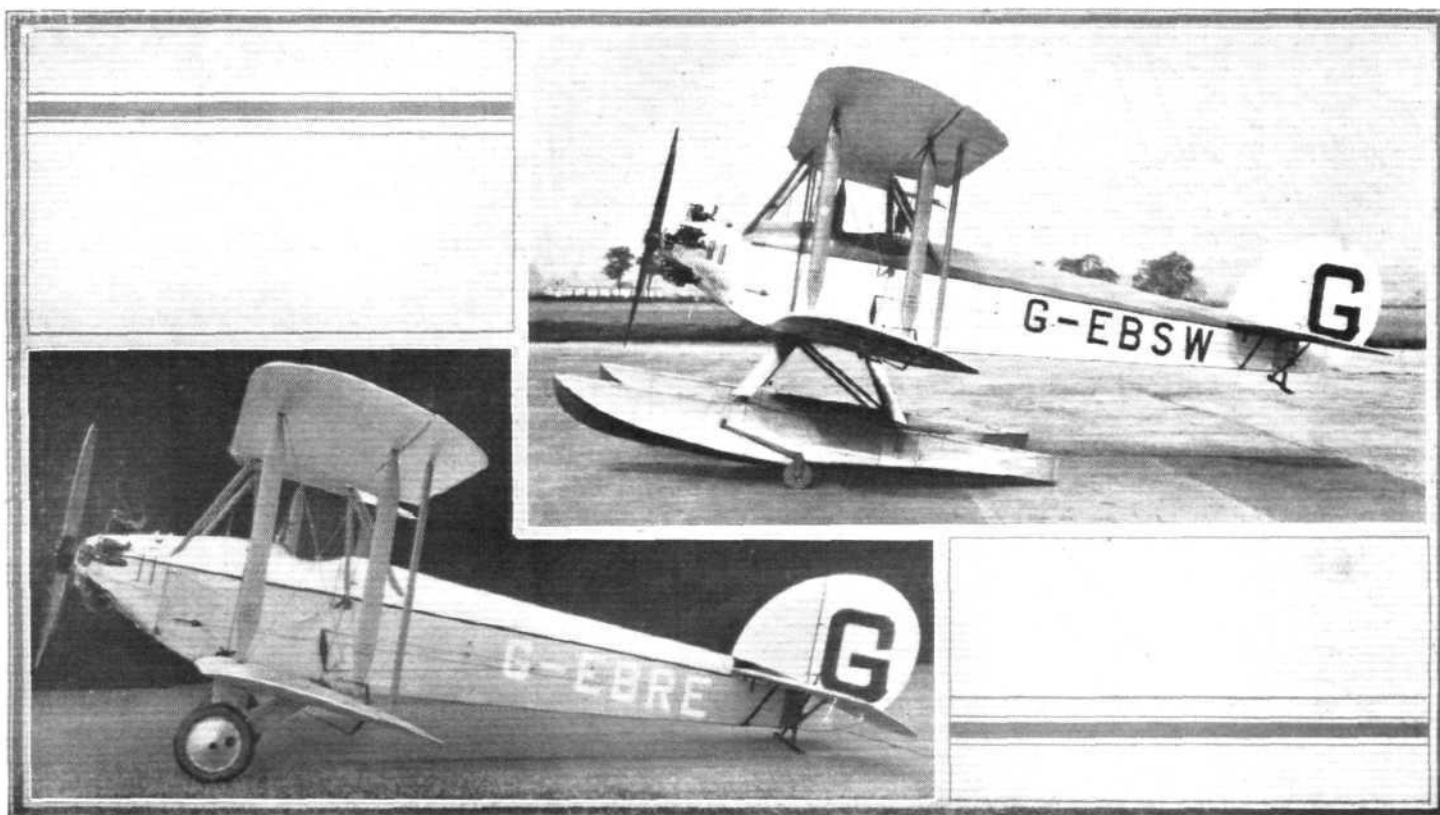
In the cockpit, a central bridge member which used to interfere between the heads of the pilot and passenger is removed, and the side structure is considerably lowered, thereby allowing deeper side doors. The general result in this respect is a much more roomy cockpit. Certain detail modifications have been made in the wing structure, which now has heavier spars. Two control columns are fitted, the rudder bars simplified, whilst the engine controls, which were formerly operated by levers on a shaft across the top of the cockpit, are set on a central quadrant low down between the pilot and passenger.

This means flying with the left hand from the port cockpit if a pilot wishes to keep one hand on the engine controls. There are additions to the equipment, including a fire-extinguisher and a number of tools. The "Genet" 65 h.p. engine is mounted on a sheet-duralumin box frame and is very accessible. A priming pump has been installed in the cockpit and, in co-operation with an efficient magneto impulse starter, it makes starting up an easy task. A handle starter is also fitted to the engine for the seaplane type of "Bluebird."

Land chassis and seaplane chassis are interchangeable, the attachments being made at the same joints on the fuselage. The floats are of the pontoon type and constructed of duralumin, supported by a rigid structure of steel tubes.

The following are some performance figures relating to the sea and land types:—

Land 'Plane:—88 m.p.h. top speed at ground level 75 m.p.h. cruising speed; 35 m.p.h. landing speed; endurance at cruising speed, 4 hours; service ceiling, 9,000 ft.; absolut



"BLUEBIRD" DEVELOPMENT: This latest model of the Blackburn "Bluebird" (Genet engine) embodies improvements suggested after experience with the Mark I machine. It is adaptable to both land and sea chassis, the two pontoons being constructed of duralumin and supported by a steel tubular structure attached to the same fuselage fittings as used for the land chassis. A land type is now touring England with Mr. Charles Blackburn in charge.

ceiling, 11,300 ft.; take-off time against 5 m.p.h. wind, 10 secs.; rate of climb from ground level, 400 ft. per minute.

Seaplane:—84 m.p.h. top speed at sea level; 82 m.p.h. top speed at 5,000 ft.; 330 ft. per minute climb from sea level; 38 m.p.h. landing speed; take-off time against a 5 m.p.h. wind, 25 secs.; range in calm at cruising speed (70 m.p.h.), 280 miles; service ceiling, 7,500 ft.; absolute ceiling, 9,300 ft.

The Mark II model was flown in the King's Cup Race and Grosvenor Cup Race this year, and certain improvements then followed to the oil system, controls, tail-setting, and propeller. After this it emerged on to the market again, and the first customer was the Suffolk Aeroplane Club, followed

by the Yorkshire Aeroplane Club, who ordered three machines.

Mr. Charles Blackburn, commercial manager of the Blackburn Aeroplane Co., left Brough Aerodrome, Yorkshire, on November 23, in a Mark II "Bluebird" (Genet engine) to make an aerial tour. The following places are being visited by him in the order given: Hadleigh Aerodrome, Suffolk; Martlesham; Lympne; Tunbridge Wells; Hamble; Stag Lane; Croydon; Sherburn; Middlesbrough; Renfrew; Newcastle; Manchester; Liverpool; Bristol; Castle Bromwich; Coventry; Norwich; C.F.S. Wittering; Nottingham, and Brough. Any communications from people interested in this tour should be sent to Mr. Charles Blackburn's Monomark BM/BRBF, W.C.I.

LIGHT 'PLANE CLUBS

London Aeroplane Club, Stag Lane, Edgware. Sec., H. E. Perrin, 3, Clifford Street, London, W.1.

Bristol and Wessex Aeroplane Club, Yate, Gloucester. Secretary, Lieut.-Col. C. Fleming, Filton Aerodrome, Patchway.

Hampshire Aero Club, Hamble, Southampton. Secretary, Maj. Ross White, Hamble, Southampton.

Lancashire Aero Club, Woodford, Lanes. Secretary, C. J. Wood, Oakfield, Dukinfield, near Manchester.

Midland Aero Club, Castle Bromwich, Birmingham. Secretary, Maj. Gilbert Dennison, 22, Villa Road, Handsworth, Birmingham.

Newcastle-upon-Tyne Aero Club, Cramlington, Northumberland. Secretary, A. H. Bell, c/o The Club.

Norfolk and Norwich Aero. Club, Mousehold, Norwich. Secretary, H. O. Bennett, 5, Opie Street, Norwich.

Nottingham Aero Club, Hucknall, Nottingham. Hon. Secretary, Cecil R. Sands, A.C.A., Imperial Buildings, Victoria Street, Nottingham.

The Scottish Aero Club Movement, 101, St. Vincent Street, Glasgow. Secretary, Harry W. Smith.

Suffolk Aeroplane Club, Ipswich. Secretary, Courtney N. Prentice, "Hazeldean," Stowmarket, Suffolk.

Yorkshire Aeroplane Club, Sherburn-in-Elmet, Yorks. Secretary, D. M. N. Coles, The Aerodrome, Sherburn-in-Elmet.

LONDON AEROPLANE CLUB

REPORT for week ending November 27.—During the past week the weather has practically stopped all flying at Stag Lane.

On Friday, 25th instant, there was a slight break which enabled flying for 1 hr. 50 mins., and this was confined to solo flying by R. Sanders-Clarke and P. W. Hoare.

Christmas Closing.—The Club will be closed down on the evening of Thursday, December 22, and will re-open on the morning of Thursday, 29th proximo.

BRISTOL & WESSEX AEROPLANE CLUB

FLYING report for week ending November 26.—Total flying time, 12 hrs. 35 mins.; instruction, 7 hrs. 10 mins.; solo, 4 hrs. 30 mins.; passengers, 55 mins.

Instruction (with Mr. E. B. W. Bartlett): Messrs. A. E. Arnold, P. H. H. Bryan, T. H. Clarke, L. H. Roberts, H. A. Tiarks, W. R. Walwyn, Hon. P. L. Bathurst.

Soloists under instruction: Hon. H. C. H. Bathurst, Messrs. A. H. Downes-Shaw, R. A. Hall, S. K. Jopp, L. H. Roberts.

Passengers (with Mr. Bartlett): Miss Burnside, Messrs. L. W. Putman, Mrs. Moule.

During the week three members have qualified for their "A" Licence. These are the first members of the club to qualify and we offer them our congratulations. They are Hon. H. C. H. Bathurst, Mr. A. H. Downes-Shaw, our chairman, and Mr. R. A. Hall.

The weather has been very bad during the week, no flying being possible on Monday and Wednesday.

HAMPSHIRE AEROPLANE CLUB

REPORT for week ending November 20.—Total flying time, 7 hrs.; instruction, 3 hrs. 40 mins.; solo, 2 hrs. 45 mins.; test flights, 35 mins.

Terrible weather conditions on Thursday, Friday, Saturday and Sunday prevented us from doing much flying this week. However, we had a companion in misfortune in Sir Alan Cobham who arrived at Hamble on Thursday

afternoon in his Short "Singapore" flying boat, and was weather bound until Sunday morning. The first persons to greet him and give him assistance upon his arrival were two members of this club, Capt. Kirby and D. A. R. Cripps, who went out to him in Capt. Kirby's auxiliary yacht *Shubra*.

We are pleased to be able to announce that Mr. H. J. Harrington has been appointed secretary to this club. Mr. Harrington has had a great deal of experience of club secretaryship, having been for 16 years with the Old Lyonian Club at Harrow. He served with the Honourable Artillery Company on active service in Belgium, France and Italy, and at the end of the war was engaged upon a special job at G.H.Q., Italy. From our short knowledge of him, we are convinced that he will do everything in his power to help members and further the interests of the club. Another announcement which it gives us great pleasure to make is that we have now placed an order with Messrs. A. V. Roe and Co. for a Mark III Avian, and hope to get delivery in about four weeks.

The following members had instruction with Flight-Lieut. Thomson:—Mrs. Aitken Dick, Lieut.-Com. Evans Penman, R.N., Lieut. Mandeville, R.N., Capt. Kirby, M.M., Mr. Hall, Mr. Lowe-Wilde and Mr. Courtney.

The soloists were Miss Hume, Don J. de la Cierva, Mr. Cripps, Mr. Stephen Fry and Mr. Stanford.

LANCASHIRE AERO CLUB

REPORT for week ending November 26.—Flying time, 13 hrs. 40 mins. Instruction, 6 hrs. 35 mins.; solo flights, 4 hrs.; passenger flights, 1 hr. 50 mins.; test, 1 hr. 15 mins.

Instruction (with Mr. Brown): Messrs. Heath, Hall, Tweedale, Eills, Allott, Gort, Browning, Davison, Benson, Pattricieux, Miss Brown.

Soloists (under instruction): Messrs. Davison, Gerrard, and Meads.

Pilots: Messrs. Slater, Costa, Rowley, Michelson, Twemlow, and Harber.

Passengers (with Mr. Lacayo): Messrs. Benson, Forshaw and Hartley. (With Mr. Costa): Messrs. Callaghan and Gousa. (With Mr. Twemlow): Miss Lingard, Mr. Morris.

On Saturday, while flying Avian QL on a cross-country trip, Mr. Lacayo suddenly found his air-screw ceasing to screw. Alighting with excellent judgment in a good field he examined the engine and found that a connecting-rod had sheared and after making a nasty hole through the cylinder skirt and upper half of the crank-case had continued its career of crime by punching another hole through the bottom half of the crank-case on the opposite side. Whereupon, after remarking "Come, come, Mr. Cirrus," or words to that effect, he returned home by road.

On Sunday we were indebted (for once!) to the weather for relieving the monotony of a quiet afternoon. The weather was thick and unpleasant throughout, but just after Mr. Crosthwaite had taken off on a solo flight it proceeded to get worse. And then worse. One forgets just how many attempts were made before a successful atterrissage was effected, but at any rate it must have lasted quite long enough to convert any superior people on the aerodrome who had decided that flying was dull.

MIDLAND AERO CLUB LIMITED

REPORT for week ending November 26.—Total flying time, 6 hrs.

Dual instruction (with Mr. McDonough): J. Brewin, R. Darlington, S. Buckett, G. Robson, E. Wynn.

Solo (with Mr. McDonough): S. H. Smith, R. Bednell, H. J. Willis.

General Report.—Low clouds and fog restricted flying.

NEWCASTLE-UPON-TYNE AERO CLUB

REPORT for week ending Sunday, November 27.—Total time, 9 hrs. 20 mins.; instruction, 3 hrs. 55 mins.; "A" pilots, 3 hrs. 25 mins.; passenger flights, 1 hr. 30 mins.; tests, 30 mins.

Instruction (with Mr. Parkinson): Messrs. Hayton, Dickinson, Griffiths, Fairless and Dr. Alderson.

"A" pilots: Mrs. Heslop, Mr. R. N. Thompson, Mr. C. Thompson, Mr. F. L. Turnbull, Mr. D. Wilson.

East Kent Flying Club

This new club hopes to be able to establish itself definitely now with the assistance of the Air Ministry's new financial scheme. In a subsequent issue, we hope to give further particulars of their proposals. On November 25, the club was visited at the Lympe aerodrome by Mr. Charles Blackburn, flying in his Blackburn "Bluebird" Mk. II, with Mr. Blake as pilot. This was in the course of his aerial tour of England. The machine was demonstrated to several club members, and Mr. Little, Mr. Lewis, Mr. Drake and Mr. Dallas Brett were given 10-min. flights. A general conclusion about the machine was very favourable, particularly with regard to its low landing speed of 35 m.p.h. During the morning, Capt. Reeve arrived on a de Havilland "Moth" to refuel. He was on his way to Rome to deliver the machine to the Regia Aeronautica. Then a Danish pilot also landed at Lympe in another "Moth" to refuel, and finally came a Farman "Goliath" machine belonging to the Air Union. So it was an interesting morning for the club.

Westland "Widgeon's" Success

THE Westland Aircraft Company of Yeovil received word from Australia that a Westland "Widgeon III" won the

Use of Wind Channel for Performance Prediction

UNDER above title, Mr. R. K. Pierson, chief designer of Vickers, Ltd., read a paper, on November 17, before the R.Ae.S., I.Ae.E., in which he described very fully the methods in use at Weybridge for suspending the models, reducing spindle interference effects, etc. Somewhat obviously, the paper does not lend itself to summarising, and we must refer readers to the paper itself for full information. In the Vickers channel some very accurate work can now be done, even to the extent of testing models complete with airscrew

Passengers (with Mr. C. Thompson): Mrs. Heslop. (With Mr. Turnbull): Mr. Davidson.

With flying possible on only three days of the week, owing to very bad weather conditions, and only one machine on service, the disappointing total of 9 hrs. is all that could be managed.

Mr. Parkinson carried out two test flights, of about 20 mins. duration, in Mr. Robertson's Avro, with the owner as passenger, in addition to the Club's total.

NOTTINGHAM AERO CLUB

REPORT for week ending Nov. 25.—Total flying time: 4 hrs. 40 mins.

Dual, 3 hrs. 10 mins. Solo, 1 hr. Joy rides, 30 mins.

Instruction (with Mr. Martin), Messrs. Pilgrim, Blake, Sands and Cox.

Solo: Messrs. Ball ("A" Licence) and Sands.

Joy ride (with Mr. Martin): Mr. Dawson.

As our Moth is not an amphibian and the installation of a fog horn somewhat difficult, we have only been able to take the air on two days this week. Nevertheless Mr. Cyril Sands managed to pull off a very successful first solo and his landings, thanks to a careful application of "that 55 feeling," which we are all trying to cultivate, were wonderful to behold.

NORFOLK & NORWICH AERO CLUB

REPORT for week ending November 27.—Total flying time: 6 hrs. 30 mins.

Instruction with (Capt. Lines): Messrs. J. Morse, R. F. Potter, H. Girling, A. Barker, N. Brett, G. F. Surtees.

Soloists: W. P. Cubitt, W. H. Ramsey, R. F. Moore, H. Pank, F. Gough. Passengers: Mrs. R. Moore, Mr. J. Morse.

YORKSHIRE AEROPLANE CLUB

REPORT for week ending November 19.—Flying time, 9 hrs. 40 mins.; instruction, 7 hrs. 25 mins.; soloists, 1 hr. 45 mins.; passengers, 30 mins.

Instruction.—With Capt. Beck: Messrs. Ramsden, H. Crowther, A. Crowther, Collins, Ellis, Clayton, Batcock, Miller, Brown, Humphries, Jackson, Bell. With Mr. Stockbridge: Mr. Ostler.

Solo instruction.—Messrs. D. Atcherley, Ellison.

"A" Pilots.—Messrs. M. B. Lax, Mann, Dawson.

Passengers.—With Mr. Stockbridge: Miss Whitaker.

This week again the weather has seriously interfered with flying.

In the last fortnight one of our Bluebirds has been on exhibition in a motor showroom in Leeds, and has been of great interest to the public, and also a means of interesting new members.

On Saturday, Mr. Parkinson brought Capt. Lamplugh from Newcastle, and as there was half a gale blowing, it was considered better to put the machine away, and not attempt to fly it back until Monday. Newcastle's loss for the weekend was Yorkshire's gain.

Report for week ending November 26.—Flying time: 7 hrs. 5 mins. Instruction: 5 hrs. 35 mins. Soloists: 1 hr. Passengers: 30 mins.

Instruction (with Captain Beck): Miss Watson, Messrs. Jackson, Brackenbury, Clayton, Crowther, Ellis, Hepworth.

Solo instruction: Mr. Ellison.

"A" Pilots: Messrs. Brackenbury, Lister, Wood and Norway.

Passengers (with Captain Beck): Miss Stevenson, Mr. Shaw. With Mr. Brackenbury: Mr. Thomson. With Mr. Wood: Mr. Ellison.

Our appallingly low hours this week must be attributed to the fact that it has only been possible to fly on two days due to our being utterly and completely fogbound the rest of the week. It seems astonishingly bad luck, for the visibility on the aerodrome has been less than 50 yards, whilst three miles distant the country has been bathed in brilliant sunshine. On Wednesday Capt. Beck took G EBRG to be fitted with a new type "Genet" engine, and collected G EBRF thus equipped, which shows a marked improvement on the previous type. The "Clubhouse" rumour grows stronger every day, and it is hoped that early in the New Year this will have developed into an accomplished fact.

prize for the fastest time in the Queensland Aerial Derby Speed Championship Cup Race on November 12. The course was a triangular one of 45 miles and the pilot was Mr. Kent. This machine was recently supplied to Brockway Motors, Ltd., of Sydney, N.S.W., a motor firm that is adopting the light aeroplane business as a branch concern.

D.H. Items

THE Handley Page automatic slot device is to be tried on a D.H. "Moth," with which Capt. G. de Havilland and Capt. H. Broad will shortly make test flights. Mr. F. N. St. Barbe, the de Havilland business manager, is now in Canada arranging a distributing base at Ottawa or Montreal for the assembly of the D.H. "Moths" being sent to Canada for the new flying clubs. It is expected that a manufacturing plant may develop. Incidentally, Canada has ordered twelve more "Moths," this making a total of 28 ordered so far. Maj. de Havilland reached Adelaide recently by air in a "Moth," with the Rev. John Flynn, Inland Superintendent of the Australian Presbyterian Church, as passenger. This was in connection with an aerial medical service scheme to be inaugurated by the Australian Inland Mission next Easter. The idea is to establish the "flying doctor."

running. For instance, the lecturer stated that the accuracy of prediction of performance from model tests gave outside limits of error of 2 per cent. on ground level speed; 5 per cent. on rate of climb at ground level, and 7 per cent. on ceiling. Of special interest was Mr. Pierson's reference to the method used by him for visualising the airflow by the use of a plate coated with black varnish, in which is imbedded grains of sand. French chalk introduced into the channel is deposited in "drifts" behind the sand grains, and by their length and direction give an indication of the airflow.

MODEL AIRSHIPS

JUST recently we referred in *FLIGHT* to a suggestion put forward at a meeting of the Society of Model Aeronautical Engineers that a model airship section should be formed, a suggestion that was favourably received and supported by Sir Sefton Brancker, Director of Civil Aviation, who was presiding at the meeting in question. As we remarked at the time, there seem to be great possibilities in model airships, not only from the sporting or competition point of view, but also as a means of practical research. In the latter connection, it will be obvious that with a model airship it would be possible to fly a model airship under control, and so observe its behaviour with considerably greater facility than would be the case with a model aeroplane.

Quite apart from these points, however, the construction and flying of model airships should open up a comparatively new field of activity for modelists and others, one which we feel certain will provide much interest, instruction and amusement—to say nothing of the incidental support it may give to the lighter-than-air movement itself.

So far, however, very little has been done with model airships, and as a result very little data or information is available for the would-be model airship enthusiast, so that while there are many who are only too ready to set about it, they are at a loss to know where and how to begin. Fortunately, practical interest in the model airship scheme is not lacking, and several of those concerned in airship design and construction have looked favourably upon it and have promised their support and assistance.

As a start, we give below some useful data on model airships—which should enable the lighter-than-air modelist to make a beginning—which has been compiled by Mr. R. H. Scholtel, of British Airships, Ltd.

The Technical Aspect of Model Airships

LIFT is the most important factor to be considered, so let us therefore form some idea of the lift we are likely to obtain.

By the principle of Archimedes, we know that when a body is immersed in a fluid, an upward force is exerted upon it equal to the weight of the fluid displaced. For the body to be buoyant, this upward force must be greater than the weight of the body itself.

In the case of the airship the fluid is air, the weight of which may, for practical purposes, be taken as 0.075 lb./cub. foot; hence, for the airship to have lift, its weight per cub. foot must be less than this figure.

The method employed is to fill as light an envelope as possible with some gas having a less density, or weight per unit volume, than air. Suitable gases are hydrogen and coal gas. The weight of hydrogen gas is 0.005 lb. per cub. foot, so that the difference of the weight of hydrogen and that of air is 0.07 lb./cub. foot. Thus we find that the lifting force of hydrogen is 0.07 lb./cub. foot, or 70 lbs. per 1,000 cub. feet. Coal gas is heavier than hydrogen and weighs 0.032 lb./cub. foot, and hence it only gives a lifting force of 0.043 lb./cub. foot.

The total lifting force exerted by the gas contained in the envelope is known as the gross lift of the ship, and if the ship itself has an exactly equal weight, then the system is in equilibrium and the ship will neither rise nor fall. Such a state is required for steady flight.

Commercial hydrogen will give a lift of between 60 and 68 lb./cub. foot. We have found then that—

Gross Lift. lbs. = Total volume of hydrogen in cub. ft. \times 0.07.

Shape of Envelope. This is of great importance, because upon it depends the lift, speed and manœuvrability of the ship.

In order that the weight of the envelope shall be as low as possible for a maximum enclosed volume, the shape of the envelope should be as nearly spherical as possible. Such a shape is impractical, because of the large area of cross section offered to resistance to forward motion. It is for this reason that the airship envelope is elongated to what has been found to be a streamline shape, giving least resistance.

Broadly speaking, the longer and thinner the ship, the

faster she will be, so long as the shape is kept a good streamline. Hence, a mean must be struck between these two cases, and the shape must be such that the ship shall be as fast as possible for the necessary lift. The usual values of fineness ratio of length \div max. diameter, are from $3\frac{1}{2}$ to 6 for a good streamline shape. Any parallel portion of envelope is found to increase resistance.

A good streamline shape is given by an ellipsoidal nose having its semi-minor axis two-fifths of the length of the airship, from the nose, the tail being outlined by parabolic or circular arcs tangential to the ellipse at the maximum diameter.

It is clear that lift is proportional to gas volume, whilst the weight of the ship may be taken as proportional to the surface area.

Linear dimensions are proportional to (volume) $^{1/3}$. Weight is proportional to (volume) $^{2/3}$.

From which it may be seen that for an increase in gross lift the weight of the ship is not increased in the same proportion. It is for this reason that airships in small sizes are of no practical value.

The table below shows overall dimensions and gross lift for sizes of model ship, based upon a fineness ratio of 4.6 : 1

Model Ships.

Volume Cubic feet.	Length Feet.	Max. Diam. Feet.	Gross Lift. lbs.
1,000	35.4	7.7	70
750	32.2	7.0	52.5
500	28.3	6.2	35
250	22.3	4.8	17.5
100	16.4	3.7	7
50	13.2	2.8	3.5
25	10.3	2.2	2.75
20	9.6	2.1	1.4
10	7.6	1.7	0.7 = 11.2 ozs.
5	6.0	1.3	0.35 = 5.6 "
$2\frac{1}{2}$	4.8	1.0	0.175 = 2.8 "

In the non-rigid or semi-rigid type of ship it is necessary that the gas contained in the envelope shall be under pressure, so that the shape of the envelope shall be maintained under all conditions. This internal pressure is usually between 3 and 5 lb. per square ft., according to the shape, and type of rigging employed.

Now it is a practical advantage to use the lightest fabric which will stand the necessary internal pressure.

If p = Internal pressure in lbs. per square inch.

D = Maximum diameter in ins.

F = Factor of Safety.

f = Tensile strength of fabric in lbs. per inch width of material.

$$\text{Then } 2f = F.p.D. \therefore D \text{ in.} = \frac{2f}{FP}$$

Thus the minimum practical diameter of envelope for any strength of fabric is fixed.

It is necessary in the case of full size ships to fit air ballonets within the envelope, that may be pumped up to maintain the necessary internal pressure, after gas has been lost on account of its expansion on ascent.

Such ballonets will probably not be necessary in models as the height obtained will not endanger the envelope to bursting.

Power required to propel the Ship.—The resistance to forward motion depends upon the shape of the envelope and its additions, such as cars, fins, rudders and elevators, etc., the size of the ship, its velocity through the air, and the density of the air.

If R be the resistance in lbs.

V the velocity in ft./sec.

ρ the density of the air in lbs. per cubic foot.

g the value of gravity in feet/sec. 2

l the cube root of the volume of the shape in cubic feet.

$$l(\text{ft.})^3 = \text{vol.}^{\frac{1}{3}}$$

$$R \text{ lbs.} = C \rho / g V^2 l^2$$

Where C = a constant depending on the streamline shape, and varying between 0.015 and 0.007.

Work = force \times distance, and as power is rate of working.

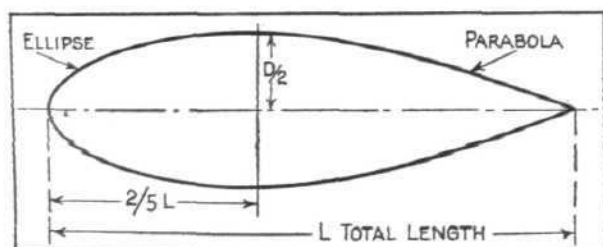
Power = resistance \times velocity.

$$R \text{ lbs.} \times V \text{ ft./sec.}$$

$$\therefore \text{Horse-power} = \frac{R \times V}{550} \quad \text{Thus h.p. increases as (speed)}^3$$

If η_a % = the airscrew efficiency, then the power to be supplied by the motor is given by:—

$$\text{Motor H.P.} = \frac{R \times V}{550} \times \frac{100}{\eta_a}$$



AIRISMS FROM THE FOUR WINDS.

Great African Survey Flight

CONTINUING his flight from England to Africa in the Short "Singapore" flying-boat, Sir Alan Cobham left Bordeaux on November 21 and arrived at Marignane, near Marseilles, the same afternoon. The next day he started again at 9.27 a.m. and reached Ajaccio, 220 miles, in 3 hrs. 33 mins. The weather was very bad on this stage, a continuous rain falling and a high head wind blowing, whilst the water in the harbour where the descent was made was very rough. His machine, however, had behaved splendidly and the landing was perfect. Bad weather caused a brief postponement of the flight the following morning, but on November 24 the "Singapore" took off again and reached Malta as darkness was falling. A landing was made at St. Paul's Bay, and not at the Calafrana seaplane base. Sir Alan and his party were entertained that evening on board the *Queen Elizabeth*, near which the flying-boat was moored. Their flying time for the journey from England to Malta had been 24 hours. The machine was next flown to the Calafrana base for refuelling, and owing to a rough sea a wing tip float was swept away, thereby holding up the flight for a few days.

The "Faireys" Reach Nigeria

THE three R.A.F. "Fairey" machines which are making a flight from Cairo to Kano, Nigeria, and back, successfully completed the outward stage. On November 25 they reached Geneina, on the Darfur frontier, on the return journey.

London-Cape Town Flight

MR. CARBERRY reached Malta on November 25 in his Fokker monoplane in which he is attempting to fly to Cape Town in record time. He is accompanied by a mechanic.

Capt. Giles Defeated Again

ROUGH weather was the cause of Capt Giles turning back to the American coast when nearly 500 miles out at sea on his way to Honolulu as the preliminary stage on his flight to New Zealand. He had left San Francisco on November 22

in his Hess "Bluebird" machine, and met fine weather for 300 miles, then came rain squalls, thick clouds and bad air pockets. When 480 miles out these conditions became worse, pitching the machine about violently, and finally turning it upside down, and apparently causing some bracing wires to snap. The pilot lost his charts, food and signal flares. He decided to return, and lightened his load by dumping all unnecessary fuel. A landing was made safely at Simeon, California. Capt. Giles proposes to make another attempt when his machine is repaired.

Air Minister at Howden

SIR SAMUEL HOARE visited Howden airship station, Yorkshire, on November 25, and spent two hours inspecting the new airship R100, which is well advanced in construction.

The "Red Rose" Delayed Again

AFTER their week in quarantine, Capt. Lancaster and Mrs. Keith Miller are now reported to be held up at Bushire owing to magneto trouble. Their stage from Ur of the Chaldees to Bushire was flown on November 26. The R.A.F. at Basra are sending new magnetos by air if possible.

Value of Air Photography

IN July, 1926, a photograph was taken of an earthwork from the air near Stonehenge. The spot was under wheat at the time, but the photograph revealed certain interesting features which led to investigations by two archaeologists, as a result of which an archaeological discovery has been made. But for the advantage of air photography for such important work, this would probably have not happened. The Air Ministry is to help Ulster archaeologists who are hoping to have a complete air survey made of the six counties. This would reveal sites and pathways not ordinarily seen.

Air Cruise for £425

IMPERIAL AIRWAYS have planned an air tour of 35 days over France, Spain, Africa, and Italy at a fare of £425, this sum covering first-class hotel accommodation, incidental transport to and from aerodromes, sight-seeing fees, tips, services



NOVEL PUBLICITY:—This is a Blackburn "Bluebird Mk. II" (Genet engine) on show in the motor showrooms of Francis E. Cox, Automobile Engineer, Leeds. It attracted the keenest public interest, for thousands viewed it during the ten days' exhibition. A number of new members were enrolled in the Yorkshire Aeroplane Club, whilst a few enquiries received may develop into sales. It is interesting to note, too, that the showing of this light aeroplane materially stimulated interest in the Essex and Wolseley cars in the same rooms.



THE VICKERS-BURNAY CUP: This Cup, standing 1 metre high on its base, has been presented by Vickers, Ltd., in conjunction with their representatives in Lisbon (Banco-Burnay S.A.R.L.), to the Aero Club of Portugal, to be competed for in a forthcoming competition which is being promoted by the club.

of interpreters, etc. The tour will start from Croydon on January 31, and the "Argosy" air liner of the "Silver Wing" class will carry 12 passengers and their luggage. The "Argosy" is an Armstrong-Whitworth machine fitted with three Armstrong-Siddeley "Jaguar" engines.

Distress Signals

THE International Radio Conference has adopted the word "Mayday" as the distress call for use in radio-telephony. The Royal Air Force and civil aviation in this country adopted this word as an aircraft distress call some time ago.

Swift Air Line

AN Imperial Airways machine recently flew from Cologne to Croydon in 160 minutes' actual flying time. The pilot was Capt. H. S. Wilcockson.

Next Year's Display

IN 1928 the R.A.F. Display will take place at Hendon on Saturday, June 30.

The British Speed Record

THERE appears to be some doubt as to whether or not an attempt on the world's speed record is to be made by the Air Ministry with the Supermarine-Napier S.5. A final decision has not yet been arrived at, but it is improbable, if an attempt is to be made, that it will be before the New Year.

The Atlantic Wins

THE crew of the German monoplane D.1230 (Junkers) has abandoned the proposal to complete the Atlantic flight from East to West. The machine is now at the Azores, having crossed from Lisbon some weeks ago, and its attempts to take off again for Newfoundland have been frustrated by the prevailing heavy swells, which damaged the metal air-screws. The machine itself and the floats have successfully resisted the strain of these conditions, but the experts sent to Horta decided against further progress. The second machine, the Heinkel monoplane, D.1220, which has been waiting at the Azores to cross to Newfoundland, was badly crashed when making a similar attempt.

A New Air Line

THE Soviet Government has fixed a contract with Junkers

Company for organising an air line between Moscow and Teheran.

Locusts and Mosquitoes v. Aeroplanes

To combat the threatened locust invasion in Egypt, the British Government has offered the Egyptian Government the services of Air Force machines. At New South Wales aeroplanes are to be used to spray oil over large swamp areas near the Parramatta River, where mosquitoes breed.

The World's Airways

FLIGHT-LIEUT. S. N. WEBSTER, Flight-Lieut. O. E. Worsley, and Flight-Lieut. S. M. Kinead were among the guests at a dinner on November 28 at the Lyceum Club at which Lady Elibank presided. Sir Granville Ryrie, High Commissioner for Australia, who proposed the toast of "Imperial Aviation," mentioned that Australia now had 5,000 miles of air routes, and another 5,000 miles were under survey. The mileage covered last year was 540,000, whilst nearly 11,000 passengers were carried. The Australian Government has given another £200,000 subsidy for the air service this year, making £400,000 altogether. Colonel The Master of Sempill also spoke. He remarked that although there were 36,000 miles of air routes in Europe only about 1,000 miles were operated by the British Imperial Company though it was true that in the Near East we had another 1,000 miles. Germany had 14,000 miles of airlines, France 8,000, and the United States 17,000 miles.

Hudson Straits Air Survey

A *Times* message from Toronto states that the party in the s.s. *Stanley*, which returned to Quebec from the Hudson Straits, reports the establishment of three aviation survey stations with a personnel of twelve airmen each. The stations at Port Burwell, at the south-west end of Nottingham Island, and at Wakenham Bay, will report daily by wireless to the Department of Marine and Fisheries on the ice and weather conditions in the Straits all the year round.

Schneider Winner on View

THE Supermarine-Napier S.5 is now being exhibited at the Horse Guards' Parade, London, until 3 p.m. on December 6.

THE OLD FLYING DAYS*

To one associated with flying since the early days, Maj. C. C. Turner's book, "The Old Flying Days," does more than revive old memories. It "gives one furiously to think"—and, in the end, to hold a much deeper respect for those early flying days and the pioneers connected with them. Its interest is positively magnetic from beginning to end.

Hitherto, when speaking or thinking of some past incident in the early history of flying, one has been apt to do so with a certain amount of chaff or half-contempt—sometimes laughing heartily in a superior manner over those strenuous efforts of man to fly. Yet, when one now reads of the hundreds of incidents concerning this early history, all collected together in one volume—told by one of the pioneers himself—at the conclusion we find ourselves asking the question, "Well, *did* they do so very badly, after all, even in view of modern aeronautical achievement?"

We hear a lot today about "air-mindedness," "stimulating an interest in aviation," etc., while flying meetings, air pageants and big flights are occasionally organised with this end in view. But when Maj. Turner in his book reminds us about such things as the well-attended pre-war Hendon flying meetings one is inclined to think it is today a case of *reviving* an interest in aviation rather than one of creating it.

Again, we find that many of the developments in aeronautics, which are looked upon as more or less recent achievements, were carried out or investigated, with a certain amount of success, in those early days. Individually, we knew of these, but it is not until one sees them set out *en masse*, so to speak, that it is possible to realise how much was done "away back."

In his preface Maj. Turner says that this book is not an attempt to compile a complete history of the early developments of flying in Great Britain—this being a task beyond his powers. He further suggests that Mr. J. E. Hodgson, whose "History of Aeronautics in Great Britain" takes us to the latter half of the nineteenth century, might undertake it. This is an excellent suggestion, and a second work on the

lines of the first, dealing with the subsequent period, would undoubtedly be of considerable value as a book of reference for the student or for record purposes. Nevertheless, Maj. Turner has managed to tell us the history of the first efforts of the practical period of flying, if not complete, very, very nearly so—and in a style that is most readable. "The Old Flying Days," in fact, would serve as an acceptable "Introduction" in popular form, to the complete historical and technical record of the same period which it is suggested that Mr. Hodgson might compile.

Maj. Turner says he only seeks to recall the spirit and the atmosphere of these early days, and we think he has succeeded admirably, especially as most of his "story" is drawn from his personal experiences and association with these pioneer days and men.

After the opening chapter on "The Old Brigade," in which reference is made to such names as José Weiss, Edward Frost, Hiram Maxim, Capt. Templer, Col. Capper, S. F. Cody, etc., Maj. Turner proceeds to tell us about those interesting early days at Eastchurch, where practical flying in this country really started. C. S. Rolls, Cecil Grace, Moore Brabazon, McClean, Prof. Huntingdon, Leo Jezzi, T. O. M. Sopwith, Howard Wright, the early naval pioneers, Samson, Gregory, Longmore and Gerrard, and, of course, Short Bros., are just a few of the names mentioned in this chapter. Eastchurch, he notes, was the first to introduce an experiment with many of the more recent developments in aircraft—such as multi-engined machines, wireless, flights from warships, bombing, aerial machine guns, etc.

Following Eastchurch, we have a chapter on the early days at Brooklands, the home of the pioneer British aircraft constructors. This chapter is full of fascinating and interesting incidents, far too numerous for mention here, the "Blue Bird" and the sewage farm, however, not being forgotten.

In the next chapter, "Early Days at Hendon," we find much of interest that also gives food for thought. Hendon, more, perhaps, than any of the other flying centres, reflected the progress and development of flying in a remarkable way. As Maj. Turner points out, Eastchurch, Brooklands and Hendon each had their definite "atmosphere"—Hendon

* *The Old Flying Days*. By Maj. C. C. TURNER. Sampson Low. Price 25s. net.

being, from the first, mainly associated with the development of flying as a sport. But for all that, in the yearly happenings at Hendon it is possible to follow the advance made in the science of aeronautics generally during this early period.

Maj. Turner refers to the interesting fact that during 1913 regular week-end flying meetings (commencing from February) were held at Hendon without a break throughout the year, when during the 51 race meetings and various other aerial fêtes, demonstrations of looping, and night flying exhibitions, some thousands of flights were made in all conditions of weather before large enthusiastic crowds! Similar meetings, at less frequent intervals (although, we remember, some flying was always to be seen on any Saturday or Sunday), were, of course, also held before and after 1913.

It must be admitted that we have nothing like this to record for aviation today—the R.A.F. Annual Flying Display being the only generally popular “big-noise” in flying we have now. The light ‘plane clubs, with their air pageants, are, we think, helping to revive regular flying meetings.

This only brings us to Chapter IV—and there are 22 more chapters (317 pages) of Maj. Turner’s “incomplete” history! all of which are just as interesting and full of other remarkable facts. Our space, unfortunately, is limited, and we can only refer briefly to some of the other points regarding “Old Flying Days.”

Speaking generally, Maj. Turner deals with nearly every aspect of flying, in which he gives us information and statistics

which should be of no little value. The book also contains numerous illustrations of many of the machines, etc., referred to in the text. Then there are several delightful pen pictures of some of the pioneers—quite apart from the casual references that occur in other chapters.

The big British flying meetings, such as Doncaster, Blackpool, Bournemouth, etc., are also dealt with, as are the various other flying events like the London-Manchester and similar events.

Some chapters, entitled “My Notebook,” include numerous notes on important and interesting events and people that do not come under the specific headings of other chapters. “Learning to Fly in the Old Days” is a chapter full of “atmospherics,” while Maj. Turner’s personal experiences of ballooning form a complete book in themselves.

Airships, the early Exhibitions, and the Government and Flying are other subjects dealt with; but there, like Maj. Turner, we cannot attempt a “complete” review of what is undoubtedly one of the most interesting and valuable books on aeronautics that has yet been produced.

In conclusion, we only wish to criticise one of several kindly references to *FLIGHT*. Maj. Turner states that an aeronautical section was started in our sister journal, the *Automotor Journal*, about 1908, which became a separate issue under the title of *Flight*. This is true—except that it was nearer 1904-05 when an aeronautical section became a regular feature of the *Automotor Journal* before the birth of *FLIGHT* in 1909.

ON “COPYING”

[In connection with the letter from Mr. Oswald Short to the editor of the Italian journal *Aeronautica*, the text of which was published in *FLIGHT* of October 13, 1927, concerning the question of “copying” in the design of Schneider Trophy machines, that journal, in its issue of November, 1927, publishes Mr. Short’s letter in English and Italian, and a reply, in Italian and English. The text of the English version of the reply we give below, without comment.—ED.]

“Never we would have taken the initiative putting food on the ground of polemics, should have not the English Reviews *Flight* and *The Aeroplane* in their numbers, we cited in our article ‘Discutiamo di priorità di tipi’ of September last, sinuously hinted that possibly the Italian monoplane ‘M.39’ of the Schneider Cup and therefore its successor the ‘M.52’ could be given a progenitor in the ‘Supermarine S.4’ of the Schneider race, 1925 out of the capital fact, that both were monoplanes.

“In this review number of September we have already demonstrated what a lack of justice and judgement that unreal assertion bore with itself.

“That you come and repeat us today, dear Mr. Short, that British designers do not depend upon us and that it is absurdly thinkable, and we fully agree with, that they might be obliged or even inclined to take advantage of our ideas it is a statement which give us straightwards the right to tell you that yourself long before us have fallen in the very ditch with your declarations, with your description of your Italian travel, of your visit to the Macchi works enflorished with that conversation piece of yours, which is a blooming fruit of your alert phantasy?

“It is therefore with full righteousness and justice that we have affirmed and confirm that the floating which have attired your attention so far as to be taken of your own Rochester construction, were but the result of our alone investigations and studies.

“On the other hand if you want to be shown that our floating in 1926 were both hydrodynamically and aerodynamically superior to yours with your pardon, it will sufficiently do to state that the American Navy, admiring the features of our construction, passed order to the Macchi works for same floatings to be fitted on their seaplanes under the condition that they should be studied and built up along the line of same principles. And you know that American have a universally acknowledged competence in the branch.

“We are not acquainted with the fact that an equal acknowledgement has been bestowed on your floatings, which took part to the prior Schneider trophy in 1925 and which

on the contrary as far as we know, did not awake any special interest.

“What about the Italian floatings this year? In their hydrodynamic performance and their penetration power we think to be right in asserting that they were an inch behind the British ones. The floating tests have been a true success for us: while the English machines drove forwards amidst a foggy cloud of water ours got rid of water since the very first minutes and demarred in half their time.

“Mr. Short’s conjectures about the genesis of the ‘M.39’ that he is with a strange flow of praising attributing to Mr. Macchi, jr., instead to its real designer and builder the Chief Engineer, Mr. Castoldi, are, to say little, a jokeful play. To build up a new design of floating by lending and deturning principles and features from other existing machines and moulding them up into the new type, might be a method Mr. Short agrees with and almost patronises, but as far as we are concerned, we trust only our own study and experience and know very well that we can beat our own trend of original building.

“While we are absolutely contrary to enter or insist into any sterile polemic, we do not wish, of course, to see our constructive original ideas misconceived or in any way contended by whomsoever.

“To was one’s irony on the ‘famous dimensions’ it methinks to us to be somewhat out of place, inasmuch as the machine which was built by Mr. Short was not able to share into the competition owing to its having uplifted on starting during the train tests in Venice.

“Let us say that it is not gentleman- and sport-manlike to take such an extreme advantage of our defeat as to put our machines decidedly underneath the British ones, all the more that it is generally known that the defeat same was uniquely due to the bad luck of the engines and that on the other hand the same machines which nowadays should prove to be but bad copies of Mr. Short’s models and engineering have prohibited last year that the Schneider Cup Trophy should be won definitely by America, so giving absent England a chance to her actual victory.

“The last word however has not been yet uttered. While therefore we congratulate with the British Champions for their victory which was a really splendid one, only regretting petty interferences from outside, which have compelled us to defend our own engineering value and honour, we look forward to the future with unaltered trust and faith in this same our value and honor.”

“ING. EMMECI.”

The Royal Air Force Memorial Fund

THE usual meeting of the Grants Sub-committee of the Fund was held at Iddesleigh House on November 17. Lieut.-Condr. H. E. Perrin was in the chair, and the other members

of the committee present were Mrs. L. M. K. Pratt-Barlow, O.B.E., Mr. W. S. Field, Sqdn.-Ldr. Douglas Iron, O.B.E. The committee considered in all nine cases, and made grants to the amount of £66.

THE ROYAL AIR FORCE

London Gazette, November 22, 1927

General Duties Branch

P. C. Fair is granted a permanent commn. in rank of Pilot Officer, with effect from Nov. 15, and with seniority of Nov. 15, 1926. The following are granted temp. commns. as Flying Officers on attachment for four years' duty with R.A.F. (Nov. 15):—Lieuts., R.N.—V. F. Smyth, I. M. Martineau, D. G. F. W. Macintyre, H. P. Sears, Sub-Lts. R. N. J. P. G. Bryant, H. P. Madden. Lieut., R.M.—J. S. Martin.

The following Flying Officers are transf'd. to Reserve, Class A:—R. S. Walter (Nov. 24); G. C. Lugg (Nov. 27).

Flight-Lieut. T. Henderson, M.C., A.F.C., resigns his permanent commn. (Nov. 1). The following Flying Officers relinquish their short service commns. on account of ill-health (Nov. 23):—G. P. Mee, M. A. Smyth. Flying Officer H. B. Holdway (Lieut., The Wiltshire Regt.) relinquishes his temp. commn. on return to Army duty (July 7). (Substituted for *Gazette*, July 12). Pilot Officer on probation C. R. M. Kiernander resigns his short service commn. (Nov. 24). The short service commn. of Pilot Officer on probation H. N. C. Williams is terminated on cessation of duty (Oct. 16). (Substituted for *Gazette* Oct. 25.)

Stores Branch

Pilot Officer on probation W. G. S. Wood is confirmed in rank and promoted to rank of Flying Officer (Oct. 9).



Sassoon Cup Competition

The annual competition for the cup presented by the Under-Secretary of State for Air, Sir Philip A. G. D. Sassoon, Bart., G.B.E., C.M.G., M.P., for map reading test for pilots of the Fighter Squadrons under the command of Air Marshal Sir John Salmond, Air Officer Commanding-in-Chief, Air Defence of Great Britain, resulted (on November 15) in a tie between No. 41 Fighter Squadron, stationed at Northolt (last year's winners), and No. 19 Fighter Squadron, stationed at Duxford.

All pilots of the Fighter Squadrons have taken part in preliminary heats during the last few weeks, and the squadrons which qualified for the final were No. 41 Squadron, Northolt, No. 19 Squadron, and No. 56 Squadron, North Weald. Martlesham Heath Aerodrome was selected as the base for the finals. Each team comprised six pilots from each squadron, and the test consisted of finding and dropping messages upon four selected "pin points," not easy to find on a 100-mile course over Suffolk and Norfolk. This country was specially selected as it is flat and covered with a maze of small roads, many of which are not marked on the small-scale maps. It has no outstanding features to guide pilots, and provides an excellent test for skill and observation. The high standard of map reading attained by the leading squadrons is shown by the fact that all the six pilots of both the winning squadrons found all the points correctly in spite of the fact that the weather was by no means ideal.

R.A.F. Fencing Results

The R.A.F. Fencing Union defeated the Royal Military College, Sandhurst, in a three-weapon match with foil, sabre and bayonet, at Bertrand's Fencing Academy, by 8 defeats to 19, winning the foil 4-5, the sabre and the bayonet each 2-7. The results were:—

Foil.—R.M.C.: Turnbull, 1 defeat; Seton and Barry, 2 each. Total, 5. R.A.F.: Corp. Hancock, no defeat; Sergt. Nicklin, 1 defeat; F./O. Somerhough, 3 defeats. Total, 4.

Sabre.—R.M.C.: Calderbank and August, 2 defeats each; Hazleton, 3 defeats. Total, 7. R.A.F.: Corp. Hancock and F./O. Sherman, no defeat; F./O. Somerhough, 2 defeats. Total, 2.

Bayonet.—R.M.C.: Griffiths and Laird, 2 defeats each; Green, 3 defeats. Total, 7. R.A.F.: F./O. Montgomerie and Sergt. Digby, no defeat; F./O. Haddon, 2 defeats. Total, 2.

In the match against the Salle Bertrand team, the R.A.F. were beaten on November 18. The results were:—

Foil.—R.A.F.: Sqdn.-Ldr. F. G. Sherriff, no defeat; Sergt.-Maj. E. J. Bradbury, 2; Corp. A. J. Hancock, 3. Total, 5. Salle Bertrand—J. A. Odbam and B. Cederin, 1 defeat each; Lieut.-Col. A. Ridley-Martin, 2. Total, 4.

Epee.—R.A.F.: Sherriff and Flight-Lieut. J. D. Hardman, 2 defeats each; Bradbury, 3. Total, 7. Salle Bertrand—Count Lavradio, no defeat; C. H. Biscoe and J. Pinto Leite, 1 each. Total, 2.

Sabre.—R.A.F.: Sherriff, 2 defeats; Sergt. F. J. Stubberfield and Sergt. J. Digby, 3 each. Total, 8. Salle Bertrand—Ridley-Martin and G. L. G. Harry, no defeat; A. H. Corbie, 1 defeat. Total, 1.

R.A.F. Squash Racquets Victory

The R.A.F. Club, on their own court, beat the R.A.C. in the first division of the Bath Club Cup squash racquets competition on November 16 by two matches to one.

Examination for Air Navigators

An examination for 1st and 2nd Class Air Navigators' licences will be held at the Air Ministry, Gwydyr House, Whitehall, on Monday and Tuesday, December 19 and 20, 1927.

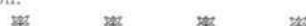
Application forms, the syllabi, and conditions of examination, may be obtained on application to the Secretary, Air Ministry (C.A.2), Gwydyr House, Whitehall, London, S.W.1.

Formal applications to sit at this examination should be received at the above address not later than December 12, 1927. Candidates should give with their applications full details of any qualifications and experience they already possess.

Before a licence can be issued, candidates will have to pass a medical examination at the Central Medical Board, 5/6, Clements Inn, London, W.C.2. Arrangements can be made for this examination to take place on December 21, 1927, if candidates make early application to be examined on that day.

W.R.A.F. Old Comrades' Association

On Saturday next, December 3, the Director of Civil Aviation, Sir Sefton Brancker, will open a bazaar and amusement park at the Queen's Westminster's Hall, Buckingham Gate, for the Women's Royal Air Force Old Comrades' Association.



PERSONALS To be Married

The marriage arranged between Mr. OWEN R. PIGOTT, R.A.F., and Miss PHYLLIS P. CASE, will take place on December 14, at Wotham Parish Church, near Diss, Norfolk.

The engagement is announced, and the marriage will shortly take place in London, between CAPT. EDMUND POLLAK, M.C., late R.F.C., eldest son of Mr. Raymond Pollak, and Miss SYRIL RHODA FOWLER, second daughter of Capt. and Mrs. Fowler, of Badjeh, Plymouth.

An engagement is announced between Mr. EDWARD WEST UNMACK, D.F.C., elder son of the Rev. E. C. Unmack, D.D., and Mrs. Unmack, of West Horsley, Surrey, and Miss ALICE MARIAN JONES, only daughter of Mr. and Mrs. C. Walter Jones, of Ellesmere House, Eccles.

Medical Branch

Flying Officer J. McCarren resigns his short service commn. (Nov. 5).

Memorandum

The permission granted to Sec. Lieut. R. H. A. Nayler to retain rank is withdrawn on enlistment in ranks of Auxiliary Air Force (Oct. 18).

RESERVE OF AIR FORCE OFFICERS

General Duties Branch

The following Flying Officers are transf'd. from Class A to Class C.:—R. H. Mahon (Oct. 28); A. W. Dalry (Nov. 18). The following Flying Officers relinquish their commns. on completion of service:—Dr. R. L. Powell (Sept. 12); F. Allen (Sept. 18); G. Veevers-Carter (Oct. 19).

Flying Officer S. G. Wybrow relinquishes his commn. on completion of service, and is permitted to retain rank of Flight-Lieut. (Oct. 24); Flying Officer F. C. North relinquishes his commn. on completion of service, and is permitted to retain his rank (Oct. 24).

AUXILIARY AIR FORCE

Medical Branch

The following Flying Officer to be Hon. Flight-Lieut.:—No. 600 City of London (Bombing) Squadron: N. P. Henderson, M.D. (Nov. 11).



R.A.E.S. AND INST.AE.E.

Official Notices

On the occasion of the departure of Gen. A. Guidoni from London on Monday, the 14th instant, to take up his new post as Director of Aircraft Construction in Italy, many distinguished people assembled on the platform to bid him farewell. Among them was Colonel the Master of Sempill, Chairman of the R.A.E.S. and Inst.Ae.E., who attended on behalf of the Society. Col. Sempill, in bidding the distinguished General au revoir, expressed the great regret of the Council and the members of the Society that he was leaving England and their hope that they would have the opportunity of welcoming him again on the occasion of the contest for the Schneider trophy in 1928.

At a Council meeting held on November 15, the Council unanimously decided to elect General A. Guidoni as an Honorary Fellow. This is the highest distinction which the Society can confer, and every member of Council was strongly of the opinion that it would be difficult to find anyone more worthy of receiving the honour than General Guidoni, who has done so much to further the course of aviation, both in his own country and in Great Britain.

On Thursday, December 8, Captain F. Entwistle, of the Air Ministry, will read his paper on "Fog" before the Royal Aeronautical Society with which is incorporated the Institution of Aeronautical Engineers. The lecture will be delivered at the Royal Society of Arts, 18, John Street, Adelphi, W.C.2, at 6.30 p.m., and will be illustrated.

Fog is the greatest enemy of all forms of transport, and particularly to aviation. Captain Entwistle, in the course of his lecture, will deal with the conditions which cause fog, the methods for determining the height of fog, and the system of fog warnings to aircraft in force. Captain Entwistle will cover also the forecasting of fog, fog dispersion and fog penetration.

J. LAURENCE PRITCHARD,
Secretary.



AERONAUTICAL PATENT SPECIFICATIONS

(Abbreviations: Cyl. = cylinder; i.c. = internal combustion; m. = motor. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.)

APPLIED FOR IN 1926

Published December 1, 1927

- 19,113. L. W. MAMMEN. Airships. (279,934.)
- 20,990. D. V. HOTCHKISS. Propulsion of aircraft and watercraft. (279,971.)
- 22,711. ROHRBACH METALL-FLUGZEUGBAU Ges. Mounting of engines on aircraft. (258,595.)
- 32,893. U. ANTONI. Construction of flexible aeroplane wings with variable profile. (269,848.)

APPLIED FOR IN 1927

Published December 1, 1927

- 5,983. J. MARTIN and J. CAMPBELL. Body frames for aircraft fuselages, etc. (280,084.)

FLIGHT,

The Aircraft Engineer and Airships

36, GREAT QUEEN STREET, KINGSWAY, W.C.2.

Telephone: Gerrard 1828.

Telegraphic address: Truditur, Westcent, London.

"FLIGHT" SUBSCRIPTION RATES

UNITED KINGDOM			ABROAD*		
	s.	d.		s.	d.
3 Months, Post Free..	7	7	3 Months, Post Free ..	8	3
6 "	15	2	6 "	16	6
12 "	30	4	12 "	33	0

* Foreign subscriptions must be remitted in British currency.

Cheques and Post Office Orders should be made payable to the Proprietors of "FLIGHT," 36, Great Queen Street, Kingsway, W.C.2, and crossed Westminster Bank.

Should any difficulty be experienced in procuring "FLIGHT" from local newsvendors, intending readers can obtain each issue direct from the Publishing Office, by forwarding remittance as above.